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UNITED STATES PUBLIC HEALTH SERVICE

MEDICAL INSPECTION OF SCHOOLS

A LECTURE DELIVERED AT THE SUMMER SCHOOL OF THE SOUTH UNIVERSITY OF TENNESSEE KNOXVILLE, TENN.

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MEDICAL INSPECTION OF SCHOOLS.[1]

A LECTURE DELIVERED AT THE SUMMER SCHOOL OF THE SOUTH UNIVERSITY OF TENNESSEE, KNOXVILLE, TENN.

By J. W. Schereschewsky, Surgeon, Public Health Service.

The medical inspection of schools is one of the latest branches of public-health work. Still in its infancy, its early beginnings may be traced back to the foundations laid in school hygiene by Locke and Rousseau in the eighteenth century and Frank, of Austria; Ling, of Sweden; Lorinser, of Germany, in the nineteenth. Cohn, of Breslau, in 1867, was the first to call attention to the large number of eye defects among school children, while Bowditch, of the United States, was a pioneer in this country, as, by his work in measuring and weighing 25,000 children in the Boston schools, he contributed valuable standards of the heights and weights of school children.

It is, however, only of recent years that the whole problem of medical school inspection has begun to be considered in any broad and thoroughgoing manner. While we are still only at the beginnings of this new and most important branch of public-health work and there is a lack of uniformity of opinion as to its scope and practical application in various sections of this and other countries, nevertheless we have already gone far enough to reveal possibilities of great future benefits, physical, mental, and economic, accruing not only to the individual child, but to the entire community.

Right of the State to Establish Medical School Inspection.

Before proceeding to the discussion of the scope of medical school inspection, its ideals, and the means by which they may be realized, let us first examine upon what basis the enlightened citizen has a right to demand or the State to establish a system of medical school inspection.

We are all agreed that children are the potential capital of the State and that it is upon the subsequent efficiency of these citizens in embryo that the future prosperity of any body politic depends.

The necessity for universal education has appeared so obvious that the State has been freely granted the right to make this compulsory,

[1] Reprint from the Public Health Reports, Vol. XXVIII, No. 35, August 29, 1913.

yet the harmful influence of physical defects and diseases, so often present in school children, unknown to parents and school-teachers, is so marked in retarding or arresting the physical, mental, and moral development of children that it is clearly of the utmost advantage to the State to go a step beyond the mere prescription of compulsory education.

It is evident that the usefulness of knowledge acquired in school is directly controlled by the ability of the pupils efficiently to embrace the opportunity for education and for mental equipment furnished by the State. Such efficiency in practice is more dependent upon the continuance of a state of physical well-being than upon any other condition. Moreover, it has been abundantly shown that physical defects and diseases of many kinds play a most important part in retarding or even arresting mental and moral development when allowed to extend their influence unchecked through childhood's years. On the other hand, it has been just as conclusively demonstrated that many such defects and diseases, while pernicious in their influence on growth and development, are, in the great majority of instances, either readily preventable or curable. Besides, unless such defects are detected by competent physical examination, their presence is often unsuspected by teacher or parent, with the result that irretrievable damage may be done.

If, therefore, we concede to the State the right to prescribe compulsory education, it follows as a necessary corollary that it is equally advantageous to the State so to supervise the physical condition and environment of its children during school life as to insure their reaching maturity with their ultimate efficiency in no way impaired by easily removable or preventable causes. The necessity for such supervision is further emphasized when we reflect that by so doing we will greatly decrease the number of public charges and other dependents now in our midst.

Scope of Medical Inspection of Schools.

A good many have the impression that the object of medical school inspection is, primarily, to detect the presence of communicable disease among school children and to take the measures necessary to limit its spread.

This conception of medical school inspection has arisen from the idea that schools form the chief agents for the spread of the communicable diseases of childhood (measles, scarlet fever, diphtheria, and the like). While unsupervised schools doubtless do furnish a means of assisting the spread of such diseases, they play by no means a preponderating part in their dissemination.

On the other hand, the type of supervision which we have just conceded as a right and duty of the State plans for a far more compre-

hensive and thorough-going system of medical inspection, briefly, to maintain at all times a careful, scientific watch over the health and the development, mental and physical, of each individual child, preventing here, correcting there, some vice of conformation, faulty habit, defective physical state, and the like, so that the child, passing unscathed through its years of school life, arrives upon the threshold of citizenship with a future unhandicapped by disease, ready at once to become an efficient social unit.

Any such scheme of supervision would also imply such sanitary inspection and control of school buildings, equipment, playgrounds, physical condition of employees, etc., that healthful surroundings for school children would be insured at all times.

As an adjunct to this supervision, the State should also prescribe, as a part of the school curriculum, quite as essential as reading and writing, instruction in hygiene and the fundamental principles of the prevention of disease, so that the citizen, in future years, may protect the health which the State has safeguarded for him during childhood.

Such then is the general scope of the medical inspection of schools. Before proceeding, however, to the discussion of the ways in which such supervision may be effected, we should strengthen our convictions by convincing ourselves of the need for it. The statement has already been made that the retarding influence of readily removable or preventable defects and diseases upon the physical, mental, and moral development of children may be profound. Let us, therefore, examine the extent to which such defects are present among school children and enumerate and briefly discuss the more important.

Extent of Defects among School Children.

Attention was first called to the existence of remediable physical defects among school children when Cohn examined the eyes of 10,000 scholars in the Breslau schools and found a large number of them suffering from defective eyesight. Kerr in England followed him with reports on the examination of the vision of some 50,000 children. Since then the results of the visual examination of a large number of children have been reported, with the findings that at least 20 per cent of school children suffer from defective vision.

In regard to physical defects of every kind, in all places where such examinations have been undertaken, the percentage of children showing some physical defect has been extremely high. Hertel in 1882 [1] reported 29 per cent of 16,000 children examined in the Danish schools to be unhealthy, while in 1884 Prof. Axel Key, working for a royal Swedish commission, reported about 35 per cent of 18,000 Swedish pupils to be suffering from chronic physical defects.

[1] Hogarth—Medical Inspection of Schools, London, 1909, p. 16.

In this country, out of 78,401 children examined in New York City in 1906, 56,259, or 71.7 per cent, presented some form of physical defect or disease requiring treatment.[1] Out of 710 children examined in Minneapolis, 462, or 65.1 per cent, were defective to the extent of requiring medical treatment.

It will be seen from the above that the figures reported by the Danish and Swedish observers are much lower than those collected in this country.

The discrepancy is doubtless due, in part, to differences in opinion of the various observers as to what conditions should be classified as physical defects and partly to the fact that when Hertel and Key's investigations were made medical science was not nearly so well developed as at present and attention had not been generally directed to the influence upon development of diseased conditions of the nose and throat, such as adenoid growths.

Be that as it may, it matters not whose results are taken, the fact none the less remains that wherever numbers of school children have been examined the percentage of physical defects has been found to be astonishingly high, and it is the discovery of this high percentage of defects which has given impetus to the movement for the medical inspection of schools.

More Important Defects and Diseases Among School Children.

It will now be pertinent to enumerate and briefly to discuss some of the more important types of defects and diseases from which school children suffer, though lack of time forbids anything but the merest outline. Such defects and diseases may be divided into the following groups for the purposes of classification.

1. Defects or diseases affecting the senses (hearing, vision, etc.).
2. Defects or diseases affecting the state of nutrition or development.
3. Communicable diseases.

DEFECTS OR DISEASES AFFECTING THE SENSES.

Sight and hearing are the two senses it is the most important to safeguard during childhood, and yet it is those two which we find most commonly defective among school children. Sight and hearing form the chief percipient apparatus through which knowledge is acquired, and upon their integrity, in later years, depends a large part of individual efficiency.

Many children, not learning properly in school, are backward only because of some defect of the eyes or ears, usually of a remediable nature. Moreover, unless such defects are early discovered and corrected, the efforts the child makes in overcoming his handicap may

[1] Medical Inspection of Schools, Gulick and Ayres, New York, 1908, p. 87.

result in increasing damage. In this way a defect, originally slight, may become a serious bar to later efficiency.

It has already been stated that some 20 per cent of all school children suffer from defective vision.

Defective hearing.—Some 6 or 7 per cent of all school children have defective hearing. This defect is often due to chronic disease of the middle ear (running ears), a frequent result of one of the infectious diseases of childhood (measles, scarlet fever), or the deafness may be mechanical in origin and due to blocking of the opening of the ear into the throat (the Eustachian tube) by reason of the presence of adenoid growths in the nasopharynx (portion of the throat above the level of the soft palate, into which the nose and ears open). The early detection of defective hearing in children is extremely important, as in most instances the hearing can be greatly improved or made normal by appropriate treatment, while the condition, when neglected, may grow rapidly worse, thus permanently handicapping the child, or, in the case of running ears, in addition to deafness, abscess of the bones of the skull or the brain and its enveloping membranes may result. In such instances the outcome may be very serious. Prompt surgical treatment is required, and the condition may end in death. It seems hardly necessary to comment further on the great importance of the sense of hearing and the implied necessity for a careful supervision of the hearing of all school children.

DEFECTS OR DISEASE AFFECTING THE GENERAL NUTRITION.

While many of the communicable diseases exercise a most untoward influence upon the subsequent development, such as hookworm infection, or may involve one of the essential bodily senses, as that of vision, as in trachoma, these diseases are all due to the action of specific organisms and will be considered under a separate heading. The defects and diseases discussed in this section originate, as a rule, from a variety of causes, dependent, in the last analysis, on ignorance, poverty, or both, and their alleviation demands, first, their prompt recognition when present in children, and, second, missionary work in the homes of the affected scholars.

Malnutrition.—The most important of these defects is malnutrition, and by malnutrition we mean a subnormal or a faulty growth of the various tissues and organs of a child's body. The term does not necessarily imply that the children have been underfed.

In addition to being the result of one of the communicable diseases, malnutrition may depend upon any one of the following causes: Unhealthful environment in the home or the city ward; improper feeding from birth; lack of sufficient play and fresh air; under and over feeding; rickets; defective teeth, etc.

Malnutrition, besides decreasing resistance to the infectious diseases, is provocative of undersize, stunted or arrested development, anemia, pallor, listlessness, mental dullness or apathy and backwardness.

Adenoid growths.—Situated in the nasopharynx, just back of the openings of the nose into the throat, is a small collection of adenoid tissue (glandular tissue, similar in structure to that of the tonsils). This collection is more prominent in children than in adults, is prone to enlargement and frequently attains such size as to interfere markedly with free nose breathing. The projecting growth is also apt partially to block the openings of the ears into the throat, so that dullness of hearing is the result. The affected child becomes a chronic mouth breather, a condition, which, if persistent, entails many unfortunate consequences.

The throat and lungs become irritated by breathing air which has been imperfectly filtered and moistened. This is not the case when the air is drawn through the nose, for the nasal passages are constructed for the purpose of warming, humidifying, and removing dirt particles and germs from the air we breathe.

The disuse of the nose for breathing leads to a lack of development of the facial bones. This in turn causes an undeveloped condition of the dental arch, causing the teeth to be overcrowded, irregular, and poorly opposed to each other, so that defective teeth and the disordered nutrition they entail follow in the train. Moreover, mouth breathing in the place of nose breathing interferes with the proper development of the lungs and chest. Breathing becomes gasping and superficial, leading to weak respiratory muscles and a poorly developed thorax. This is accompanied by a lack of the vitality and resistance to disease which we find the natural companions of big lungs and a big heart. The disordered nutrition and dull hearing consequent upon adenoid growths also lead to mental dullness, apathy, and backwardness. Adenoid growths are readily removed by means of a slight operation. Their pernicious influence upon the mental and physical development of children is so great that it is imperative to detect and remove them early.

Enlarged tonsils.—Enlargement of the tonsils usually goes hand in hand with adenoid growths. Intended originally to act as a means of protecting the body from infection gained through the mouth, the tonsils lose much of their protective powers when enlarged, and instead of serving as organs of defense form traps for catching harmful germs which they have lost their power to destroy. Children suffering from enlarged tonsils are apt to lose much time from school by reason of recurring sore throats, and are liable to rheumatic fever, diphtheria, and tuberculosis. They may serve as disseminators of an infection, while at the same time their own development is most unfavorably influenced by the presence of the enlarged tonsils.

Spinal curvatures.—These are often due to vicious postures caused by improper desks, bad lighting, undeveloped musculature, congenital difference in leg length, etc. Besides distorting the figure and unfavorably influencing physical development by reason of the resulting asymmetry, the altered relations of the bones and ligaments, together with the faulty distribution of the body weight in the erect position, spinal curvatures may lead to pains and weakness of the vertebral joints. Moreover, the faulty relations of the bones and the joints of the spinal column prevent the proper development of the heart and lungs.

Besides this, spinal curvatures are frequently symptoms of Pott's disease or tuberculosis of the spine. As the disease must be comparatively far advanced before any deformity is produced, the necessity is apparent for a careful examination and determination of the cause in all vicious postures of children.

Flatfoot.—Investigation has shown that an unsuspectedly large number of children suffer either from weak arches (probated foot) or flatfoot. Flatfoot is a common cause of much suffering and loss of bodily efficiency. In most instances the foundations of the disorder are laid in childhood through the use of defective shoes, improper standing postures, lack of development of the foot and leg muscles, and lowered states of the general nutrition. In most instances the use of proper corrective measures where applied in childhood will overcome or arrest the defect, so it is important to detect commencing flatfoot in children before the changes in the relation of the bones and ligaments of the foot become permanent.

Defective teeth.—An astonishingly large number of school children have defective teeth. Most of us regard teeth merely as aids to mastication and as ornaments to the mouth. Their loss or unsightliness seems to be regretted only from the cosmetic standpoint. In reality, the integrity and proper development of the teeth and dental arches have a most important relation to the general health and physical development. The permanence of the teeth in the jaws throughout life depends in a large measure upon the "occlusion" or the way the teeth fit together when the jaws are closed and the amount of available chewing surface.

Teeth well opposed and their chewing surfaces all available for use last well, and the constant use strengthens them in their sockets. Faulty "occlusion" or lack of ability of opposing teeth to come in contact with each other leads to their early decay through disease and fermentation of accumulated food particles. Decay started in such teeth readily extends to the others.

Not only do defective teeth contribute to defective development and a depraved state of health by reason of malnutrition and indigestion from faulty chewing, but the presence of decayed teeth and

diseased gums greatly increases the number of harmful germs in the mouth. The germs are swallowed with food and saliva, and the poisons they generate are absorbed and serve still further to lower the vitality.

Certain experiments made by dentists in Cleveland, Ohio, have given some very encouraging results. A number of school children from schools in the poorer section of the city and suffering from defective teeth, had their mouths placed in good condition, with the result that a remarkable gain in weight, general health, and scholastic standing ensued.

There can be no doubt but that a small amount of attention to the teeth in childhood is of inestimable benefit and far outweighs the most expensive and skilled treatment in later years, when it is too late. The teeth are such important factors in a sound mental and physical development that they are among the most important points covered by medical school inspection.

COMMUNICABLE DISEASES.

Vaccination.—Vaccination against smallpox is the most efficient safeguard ever contributed to preventive medicine against what was one of the worst diseases. Were everyone properly protected by vaccination, smallpox would cease to exist. Any system of medical inspection of schools therefore should supervise vaccination in school children, nor would children be allowed to attend school unless successfully vaccinated or shown to be one of those occasional individuals who are naturally immune both to smallpox and to vaccination.

Infectious diseases of childhood.—These are important not only because the ensuing mortality is greater than is popularly supposed, but because they may predispose to other diseases, such as tuberculosis, and several of them (e. g., measles, scarlet fever, diphtheria, etc.) may result in permanent disabilities. Moreover, the schoolroom is a place favorable to their spread. The necessity, therefore, is obvious for their detection in the school and the exclusion of children attacked until all danger of transmitting the disease to others is past. It follows from the foregoing that teachers should be familiar with the symptoms of the onset of these diseases.

Tuberculosis.—The importance of tuberculosis as a cause of death is well known to all. Some 5 to 15 per cent of all school children suffer from active tuberculosis. Such children, when undetected, not only may serve as a source of infection to their schoolmates, but their continued presence in the environment ordinarily pertaining to schoolrooms may rob them of the chance of recovery they would otherwise have, for childhood is the period of life showing the greatest susceptibility to tuberculosis, as it is also the period holding out the greatest hope for recovery under intelligent treatment.

Intestinal parasites.—The investigations of recent years have shown the great importance of the presence of intestinal parasites in school children. Hookworm, which infects a large number of children in the southern States, is well known for the depraved condition of the health, anemia, stunted growth, mental apathy, and backwardness which it produces. Hookworm infection is undoubtedly the greatest single foe to advances in material prosperity in those States in which it is prevalent. It is not, however, a matter of general knowledge that other intestinal parasites, such as the whipworm (*Trichocephalus dispar*), the dwarf tapeworm, or even the ordinary roundworm, are capable of producing a high grade of anemia and otherwise interfering with the proper physical and mental development.

Intestinal parasites, as a rule, can be readily expelled by simple treatment. Their continued presence in the alimentary tract is so apt to be followed by unfortunate results that the examination of school children for intestinal parasites is indicated as a routine measure in districts where they are prevalent and constitutes an important part of medical school inspection in such regions. It should not be forgotten that children infected with intestinal parasites, even if the infection is so light as not to cause general symptoms, are, nevertheless, constantly passing the eggs in their excreta, and hence may serve as disseminators of the infection. This is particularly true in those sections where the insanitary privy is the rule rather than the exception.

Chronic communicable diseases.—In this category are included certain skin diseases usually affecting the scalp, such as ringworm and favus, and trachoma, a chronic contagious disease of the eyelids. Favus and ringworm are regarded as "loathsome contagious diseases," while trachoma is designated as a "dangerous contagious disease" by the Federal authorities when found in immigrants. The exclusion of immigrants so affected is mandatory by law. Trachoma is readily spread by the close personal contacts of the schoolroom and playground, and may result in permanent impairment of the vision or even in blindness.

An accurate diagnosis of the presence of trachoma can be made only by turning up the eyelids of the affected individuals. In the absence of such inspection, some of the unfortunate results of trachoma, such as ulceration of the cornea, inflammation of the cornea (keratitis), etc., are likely to be attributed to other causes.

The disease is chronic, and when well established very difficult to cure. Hence it is of great importance to include examination for this disease in any form of medical school inspection.

Vermin.—It is astonishing to find the large number of school children infected with vermin such as body and head lice. Besides indicating neglect and poor surroundings in the home, the presence

of vermin may give rise to distressing eczema of the scalp or body. It has also recently been shown that the body louse is an agent for the transmission of typhus fever.

Mental deficiency and nervous affections.—Besides protecting the bodies of school children the state of their minds and nervous systems requires supervision from the medical standpoint. A certain proportion of children, either by heredity or through causes operative in early years, are permanent mental defectives. Others are apparently backward, but the underlying cause, while concealed, may originate in some physical defect discoverable only after competent examination. Epilepsy, neurasthenia, hysteria, and other nervous affections are not at all uncommon among school children, and proper attention in childhood may have the effect of turning these sufferers into useful citizens, rather than chronic invalids and inmates of institutions.

We clearly see, therefore, the necessity for the careful examination of mentally abnormal and deficient school children, so that the exact grade of their mental or nervous defect may be determined and the underlying cause made clear. The natural outcome of such examinations would be the creation of special classes for abnormal children.

Having thus briefly indicated some of the more important and common defects from which school children suffer and which have more or less pernicious influence upon their development and future usefulness, let us now look into the legislation provided, so far, in this country for dealing with the situation.

Unfortunately, up to the present time, such legislation is by no means so universal or far-reaching as it ought to be.

Twenty States, as follows, have recognized the necessity for the medical inspection of schools and have made some legal provision for its conduct: California, Colorado, Connecticut, District of Columbia, Indiana, Louisiana, Maine, Massachusetts, Minnesota, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, Washington, and West Virginia.

In 9 of the States the law is permissive, while in 11 it is mandatory. Of these 20 States, Massachusetts was the first to make medical inspection of schools mandatory by law in 1906, the legislation in the other States being passed from 1909 to the present time.

A considerable diversity exists in the kind of medical supervision contemplated, varying from examination for contagious diseases only to complete physical examination of pupils, teachers, and employees for defects of all kinds.

Massachusetts has probably the best and most developed system of medical school inspection in this country. The Massachusetts law provides (1) for the detection of contagious diseases in schools; and

(2) for the annual examination of children, (*a*) by physicians for noncontagious physical defects, and (*b*) by teachers for defects of eyesight and hearing.

It is evident, however, when we study what has been done as yet in medical inspection of schools, that the work is not sufficiently comprehensive. Too little money is appropriated, as a rule, for the purpose, and all available forces are not being generally utilized to their full capacity.

Let us then discuss the groups of persons who should make up the medical school-inspection staff and the extent of their duties and responsibilities.

These agents for the medical school inspection of children are as follows: (1) The school physician, (2) the school nurse, and (3) the teacher.

The Teacher.

We will begin with the teacher because her importance as an agent in medical school inspection has been generally overlooked. Hitherto teachers have been chiefly regarded as agents of instruction and discipline. No concern has been felt with respect to the part they might play in regard to the supervision of the children's health. Yet the teacher's position is filled with potentialities for good in such supervision.

In the first place, no one is brought into such close association with the class members as the school-teacher, and none, by precept and example, can exert so lasting an influence upon their mental and physical evolution. The sphere of usefulness of teachers can therefore be greatly increased by a good working knowledge on their part of the laws of health, the prevention of disease, and the fundamentals of school hygiene, and by being familiar with the more ordinary manifestations of contagious disease.

The school-inspection laws of most States provides for tests of the sight and hearing of school children by teachers. These tests are easily learned and readily executed. Their purpose is to single out the pupils having defective sight and hearing, so that the true cause and extent of their defects can be ascertained by competent medical examination and the proper treatment prescribed.

The teacher should also be the person to keep a record of the heights and weights of the children in the class. Recent studies have shown the close relation of height and weight to progress in physical and mental development.

According to Prof. Bird T. Baldwin, of Swarthmore (who has not as yet published his observations), mental maturity depends upon height and weight, the tallest and heaviest children of the same age being mentally the most mature.

Steady growth and increase in the body weight constitute most important indices to the rate of progress being made by a child. Hence if a child fails to gain normally something always is wrong, and an examination is required to discover the trouble.

It is earnestly to be hoped that the time is near when all teachers, before receiving teaching certificates, will be required to possess training in testing eyesight, hearing, and mental deficiency besides being grounded in school hygiene and the recognition of the more usual communicable diseases.

Nothing is more certain than that in the teacher we have an agent, hitherto neglected, who, if properly utilized, is susceptible, in the highest degree, of improving the health of school children. This is especially true in the case of rural schools, where the communities are small, the school the usual center of culture and information, and the influence of the teacher extensible to the home.

It is plain from the foregoing that we are increasing the requirements and qualifications of a profession which is already loaded to capacity with work. If, then, as Prof. William James puts it, we are going to require the teacher to "energize upon a higher plane," the school authorities in turn must do something for the teacher. This "something" means that the teacher should be better paid and have smaller classes. The reduction in the average size of classes will be a most important step in advance, for it will signify that the pupil is no longer a mere name to the teacher, but an individual differentiated plainly in the teacher's mind from his classmates, thus insuring much closer observation and consideration of his various aptitudes and requirements.

The results of the general entry of teachers as effectives in the army of health crusaders are certain to be of the happiest order so far as the community at large is concerned.

The School Physician.

If we increase the qualifications demanded of teachers from a health standpoint, what shall we say of the school physician? In this country at present the school physician, usually a busy practitioner or a young man just starting out to conquer a place in his profession, is paid a small salary for the part of his time devoted to medical inspection of schools. Owing to the newness of public-health work in general he does not, as a rule, approach his duties with the proper viewpoint. His idea of doctoring is to treat disease, not to prevent it. He is deficient in consequence in that breadth of mental grasp which must characterize all who work in the great preventive field of medicine.

The school physician should be primarily a man of wide general qualifications, with insight into human nature and its psychology.

He should be a keen observer, an acute and accurate diagnostician, a progressive sanitarian, especially with respect to school hygiene and the psychology of education. It goes without saying that he should be thoroughly familiar with communicable diseases and the necessary technic of bacteriologic and laboratory diagnosis; with all details of school architecture, equipment, and the like; with disinfection, lighting, heating, sanitation, and, in a word, with all the minutiæ which would increase his efficiency in this particular phase of professional activity. In addition to all this, he must be a patient, enthusiastic, forceful man, devoting all his time to this work. It is evident that such a man must receive and is fully worth adequate compensation. The money spent, however, in paying men of this caliber will be returned manifold in benefits to the State.

His duties would consist in a preliminary examination of all school children at the beginning of the school year. The object of his primary examination would not be so much a complete survey of the child's physical condition as to establish the general physical status, the freedom from communicable disease of any kind, including communicable disease of the eyes, such as trachoma, and to determine the presence of satisfactory protection against smallpox by vaccination.

Before the close of the school year each child in his district is to receive a careful physical examination, the results of which are made a matter of permanent and accurate record. Children found to have defective vision or hearing by the teacher's test are carefully examined by the school physician, and the exact nature and extent of the defect determined.

In addition to this the doctor makes mental examination of children, when necessary, in order to determine the grade of any mental deficiency which may be present, and makes recommendations, in the case of such retarded pupils, as to the special classes in which they should be placed.

Moreover, the school physician is not satisfied with the scope of his duties merely in relation to the child. He examines physically all teachers and school employees, thus insuring that only those free from communicable disease come in contact with the children.

Besides these duties the school physician is the sanitarian of the school buildings and grounds. His supervision includes the architecture of school buildings, school equipment, lighting, heating, ventilation, cleaning, sewerage and water supplies, playgrounds, disinfection, and the like. He also frames such sanitary regulations as are necessary in order to maintain the school and its environment constantly in a sanitary condition, and their condition is checked by frequent inspections.

He should, moreover, instruct teachers in matters pertaining to school hygiene and the health of their pupils.

It is seen from the foregoing that no easy job is outlined for the school physician, and it is equally evident that men who fulfill these qualifications will be great powers for good in any community.

The School Nurse.

Wherever employed school authorities have been enthusiastic in praise of the good accomplished by school nurses. One at least should be in daily attendance at each school. They attend to minor injuries and diseases, collect children to be examined by the school physician from the various classrooms, assist in keeping records, follow up children in their homes to ascertain the causes for absence, urge parents to have corrected physical defects reported in their children, discover what home conditions require correction in the case of children not progressing satisfactorily from a physical or mental standpoint, and the like.

The school nurse is a most valuable agent for extending the educational sphere of the school into the home. She has made herself indispensable wherever introduced.

The School Clinic.

The apparatus for the medical supervision of schools that has just been outlined will undoubtedly detect defects and diseases in pupils, watch over their health during school hours, and greatly improve the sanitation of school buildings and grounds, besides insuring a healthy teaching staff and school personnel.

But of what avail is it to detect a defective or diseased condition in children unless the defect is remedied or the disease cured? While the experience varies in different localities, even under the most favorable conditions, when defects in children are brought to the parents' attention a large percentage of such defects and diseases are allowed to exert their baneful influence unchecked, often leading to permanent physical handicaps and, in the case of such diseases as ringworm or trachoma, to the exclusion of children from school for long periods.

Adenoid growths, enlarged tonsils, and defective teeth form another class of defects which parents are prone to neglect, even after attention has been called to their existence, through ignorance of their effects, until the damage wrought is irretrievable. When the parents try to heed advice given for the correction of physical defects and are too poor to employ a physician for the purpose, the cry goes up that hospitals and dispensaries, already overcrowded beyond their capacity, have their facilities further clogged by the crowds of school children applying for relief. Again the time consumed in waiting their

turn in such crowded institutions is apt to discourage well-meaning parents and their children so that the defect remains uncorrected.

The obvious answer is the establishment of clinics solely for school children. Such clinics are specially adapted for the treatment of defects and diseases peculiar to school life. The treatment afforded is prompt and efficient, and, wherever they have been established, the results have been brilliant and of lasting utility.

The Country School.

What of the country school? It may well be urged that, while the kind of medical supervision just outlined is suited for the densely populated urban community, rich in funds, what can be done to furnish medical supervision in the country where the funds are scanty and the schools small and separated by great distances?

Everything that applies to medical school inspection in cities applies with even greater force in the country, and the need also is greater. Inspection of many of our rural schools has revealed insanitary conditions in need of immediate correction. In the hookworm States whole schools are found infected with the disorder and, indeed, in this country, rural sanitation to-day is a problem presenting a virgin field.

In answer one may suggest that the qualifications in hygiene and sanitation of teachers be raised as previously described, and that, wherever practicable, school nurses be attached to rural communities. The medical inspection may be performed, as is the case in England, by traveling medical school inspectors, employed by the State, with good salaries and travel allowances. The services of local physicians can be enlisted, provided they pass some form of State examination as to their special qualifications. The correction of visual and dental defects, together with such other conditions as require expert or special treatment, can be effected by means of traveling school clinics which visit localities where the reports of the medical school inspectors show their services to be needed.

In conclusion it may be said that, in common with all new problems, that of the medical inspection of schools needs working out and the future is filled with rich promises of good to be accomplished. The main point which we have for congratulation is that its potentialities are now beginning to be fully recognized, and it remains the duty of all who can to extend, so far as in them lies, the field of its application.

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